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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/629,650	07/30/2003	Tsutomu Kadotani	Q76784	6845
23373	7590	07/12/2005	EXAMINER	
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			WANG, GEORGE Y	
			ART UNIT	PAPER NUMBER
			2871	

DATE MAILED: 07/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/629,650

Applicant(s)

KADOTANI, TSUTOMU

Examiner

George Y. Wang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 April 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 4-20 is/are pending in the application.
- 4a) Of the above claim(s) 11-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 4-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 July 2003 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Newly submitted claims 11-20 directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:
 - I. Claims 1 and 4-10, drawn to an LCD device, classified in class 349, subclass 155.
 - II. Claims 11-20, drawn to a method of forming an LCD, classified in class 349, subclass 187.

2. The inventions are distinct, each from the other because of the following reasons:

Inventions II and I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the method of Invention II (claims 11-17) does not preclude spacers from being placed in the non-display region as in the device of Invention I. Furthermore, Invention II (claims 11-20) deals with compressively deforming the sealing member and bringing the substrates together in a vacuum atmosphere which are not required in the device of Invention I.

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3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification and because the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

4. Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 11-20 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 4-5, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Kijima et al. (U.S. Patent No. 6,259,500, hereinafter "Kijima").

7. Regarding claim 1, Kijima discloses an LCD device (fig. 8a, 8b, ref. 200) comprising a first substrate (fig. 8b, ref. 11 of 80), a second substrate (fig. 8b, ref. 11 of

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60), a sealing member (fig. 8b, ref. 36) to form a gap between the first and second substrates, a liquid crystal layer (col. 13, lines 33-36) formed in the gap and confined by the sealing member (fig. 8b, ref. 36), and spacers (fig. 8b, ref. 34) arranged in the liquid crystal layer within a display region (fig. 8b, ref. 38) and none of the spacers are located in the non-display region (fig. 8b, ref. 37).

8. As to claims 4 and 10, Kijima discloses the LCD device as recited above further comprising a depression (fig. 8b, ref. 85) formed on the inner surface of the first substrate where the depression is located in the second part of the liquid crystal layer forming step between the display region and non-display region and where the depression constitutes a buffer space for extra liquid crystal.

9. As per claim 5, Kijima discloses the LCD device as recited above further comprising TFTs (fig. 8a, ref. 21) arranged on the first substrate in such a way as to be electrically connected to the respective pixels and a dielectric layer (fig. 8b, ref. 85) formed on the first substrate to cover the TFTs and the pixels, such that the dielectric layer is where the depression is formed.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kijima in view of Miyazaki et al. (U.S. Patent No. 5,978,061, hereinafter "Miyazaki").

12. As to claim 6, Kijima discloses the LCD device as recited above, however, the reference fails to specifically disclose a dielectric layer having a depression formed on the second substrate.

Miyazaki discloses an LCD device having a dielectric layer (fig. 1, ref. 35) having a depression formed on the second substrate.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a dielectric layer having a depression formed on the second substrate since one would be motivated to improve alignment and orientation, and ultimately to reduce display defect attributed to deterioration in cell gap (col. 3, lines 15-19).

13. As per claim 7, Kijima discloses the LCD device as recited above, however, the reference fails to specifically disclose one of the first or second substrates having a transparent plate having a depressed part on its inner surface.

Miyazaki discloses an LCD device where the second substrate has a transparent plate (fig. 1, ref. 34) having a depressed part on its inner surface.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have one of the first or second substrates having a transparent plate having a depressed part on its inner surface since one would be motivated to provide electrode function as well as to reduce display defect attributed to deterioration in cell gap, increase yield, and provide optimum display performance (col. 3, lines 15-19).

14. Regarding claim 8, Kijima discloses the LCD device as recited, however, the reference fails to specifically disclose the satisfaction of the expression, $H \geq (1/2) \times (1000 + L) \times [0.02d + [L \times (0.02d/1000)]/L]$ (Tm).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have satisfied the relationship, $H \geq (1/2) \times (1000 + L) \times [0.02d + [L \times (0.02d/1000)]/L]$ (Tm) is satisfied (col. 16, lines 17-46), since one would be motivated to suppress the level of non-uniformity due to variations in cell thickness to an acceptable level so that a convex/concave profile can be provided (col. 16, lines 17-47). Ultimately, this serves to help realize a uniform cell thickness across the entire panel and improve display quality (col. 5, lines 7-29).

15. As to claim 9, Kijima discloses the LCD device as recited above, however, the reference fails to specifically disclose spacers that are pole-shaped formed on one of the first and second substrates.

Miyazaki discloses an LCD device having spacers that are pole-shaped (fig. 1, ref. 33) formed on one of the first and second substrates.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have spacers that are pole-shaped formed on one of the first and second substrates since one would be motivated to minimize rubbing cloth during the rubbing process so that an orientation defective area does not extend into the pixel area (abstract). Ultimately, this serves to reduce display defect attributed to deterioration in cell gap, increase yield, and provide optimum display performance (col. 3, lines 15-19).

Response to Arguments

16. Applicant's arguments filed April 26, 2005 have been fully considered but they are not persuasive.

Applicant's main argument is that the Kijima reference teaches spacers in the non-display region of the LCD. Applicant admits that Fig. 8B does not depict spacers in the non-display region, but argues that because Kijima is interested in achieving uniform cell thickness, Fig. 8B does, in fact, have cell spacers in the non-display region.

Although Applicant provides many column and line references to support his contention, the only one that is pertinent is the reference to col. 15, lines 5-13 because it is the only col/line reference pertaining to the embodiment of Example 1, which includes Fig. 8B. It is noted that the first embodiment (all disclosure recited before that of Example 1) includes a spacer 34 in the non-display region, as shown in Fig. 1B. However, in the Example 1 embodiment, it appears that Kijima is attempting to achieve uniform cell

thickness, not by having spacers 34 in the non-display region, but by providing the interlayer insulating layer 85 to exhibit a concave/convex profile in order to obtain a uniform cell gap (col. 14, lines 31-36). Thus, the teaching that Applicant cites in col. 15, lines 5-13 is actually referring to the Fig. 9, which is part of the same embodiment, having to do with thickness distribution, which depicts the difference between the display region and the non-display region. However, the solution that Kijima presents is by "providing a concave/convex profile to the surface of the interlayer insulating layer in the non-display region so that the surface profile is the same in the display region and in the non-display region." The part that recites, "even when a single size of cell spacers is dispersed across the entire panel of the LCD device," actually refers to the cell spacer being dispersed in the display regions of the entire device. Applicant's reading and interpretation is based on Kijima wanting to achieve uniform cell thickness as taught in the *other* embodiments. However, in Example 1, Kijima clearly does away with spacers in the non-display regions, as depicted in Fig. 8B, and offers an alternative solution in the concave/convex surface profile of the interlayer insulation layer 85 or achieve his purpose of uniform cell thickness. Moreover, Applicant's argument provides absolutely nothing that precludes such a reading or interpretation.

With regard to claims 6 and 7, Applicant argues that even if elements 34 and 35 were depressions (with which Applicant does not disagree), Applicant argues that the depressions are not formed in the part of the LCD corresponding to the non-display region. However, it is noted that nowhere in the claim language of claims 6 and 7 are the depressions in the non-display region found. Furthermore, claim 4, from which

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claims 6 and 7 depend, discuss the aforementioned depression, but Applicant has not made any attempt to dispute the rejection of claim 4 based on the Kijima reference.

Because the Miyazaki reference is used to show a teaching of the depression in the dielectric layer and a transparent plate in the second substrate, Applicant's arguments are not found persuasive.

With regard to claim 8, Applicant has not provided and substantial support or evidence of the advantages of the expression, $H \geq (1/2) \times (1000 + L) \times [0.02d + [L \times (0.02d/1000)]/L]$ (Tm) to overcome the motivation provided in Kijima to suppress the level of non-uniformity due to variations in cell thickness to an acceptable level so that a convex/concave profile can be provided (col. 16, lines 17-47) and to ultimately help realize a uniform cell thickness across the entire panel and improve display quality (col. 5, lines 7-29).

As a result, Examiner holds to the validity of the references used and maintains rejection.

Conclusion

17. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to George Y. Wang whose telephone number is 571-272-2304. The examiner can normally be reached on M-F, 8 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on 571-272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

gw
July 9, 2005


DUNG T. NGUYEN
PRIMARY EXAMINER